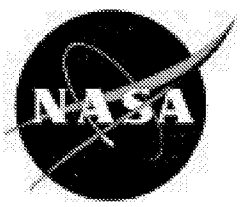
NASA/SP—1998-7011/SUPPL476
October 19, 1998

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES



National Aeronautics and
Space Administration
Langley Research Center
**Scientific and Technical
Information Program Office**

The NASA STI Program Office . . . in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA Scientific and Technical Information (STI) Program Office plays a key part in helping NASA maintain this important role.

The NASA STI Program Office is operated by Langley Research Center, the lead center for NASA's scientific and technical information. The NASA STI Program Office provides access to the NASA STI Database, the largest collection of aeronautical and space science STI in the world. The Program Office is also NASA's institutional mechanism for disseminating the results of its research and development activities. These results are published by NASA in the NASA STI Report Series, which includes the following report types:

- TECHNICAL PUBLICATION. Reports of completed research or a major significant phase of research that present the results of NASA programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed to be of continuing reference value. NASA's counterpart of peer-reviewed formal professional papers but has less stringent limitations on manuscript length and extent of graphic presentations.

- TECHNICAL MEMORANDUM. Scientific and technical findings that are preliminary or of specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. Does not contain extensive analysis.

- CONTRACTOR REPORT. Scientific and technical findings by NASA-sponsored contractors and grantees.

- CONFERENCE PUBLICATION. Collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or cosponsored by NASA.

- SPECIAL PUBLICATION. Scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.

- TECHNICAL TRANSLATION. English-language translations of foreign scientific and technical material pertinent to NASA's mission.

Specialized services that complement the STI Program Office's diverse offerings include creating custom thesauri, building customized databases, organizing and publishing research results . . . even providing videos.

For more information about the NASA STI Program Office, see the following:

- Access the NASA STI Program Home Page at ***http://www.sti.nasa.gov***

- E-mail your question via the Internet to help@sti.nasa.gov

- Fax your question to the NASA STI Help Desk at (301) 621-0134

- Telephone the NASA STI Help Desk at (301) 621-0390

- Write to:
  NASA STI Help Desk
  NASA Center for AeroSpace Information
  7121 Standard Drive
  Hanover, MD 21076-1320

Introduction

This supplemental issue of *Aerospace Medicine and Biology, A Continuing Bibliography with Indexes* (NASA/SP—1998-7011) lists reports, articles, and other documents recently announced in the NASA STI Database.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which humans are subjected during and following simulated or actual flight in the Earth's atmosphere or in interplanetary space. References describing similar effects on biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. Applied research receives the most emphasis, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the publication consists of a standard bibliographic citation accompanied, in most cases, by an abstract.

The NASA CASI price code table, addresses of organizations, and document availability information are included before the abstract section.

Two indexes—subject and author are included after the abstract section.

SCAN Goes Electronic!

If you have electronic mail or if you can access the Internet, you can view biweekly issues of *SCAN* from your desktop absolutely free!

Electronic SCAN takes advantage of computer technology to inform you of the latest worldwide, aerospace-related, scientific and technical information that has been published.

No more waiting while the paper copy is printed and mailed to you. You can view *Electronic SCAN* the same day it is released—up to 191 topics to browse at your leisure. When you locate a publication of interest, you can print the announcement. You can also go back to the *Electronic SCAN* home page and follow the ordering instructions to quickly receive the full document.

Start your access to *Electronic SCAN* today. Over 1,000 announcements of new reports, books, conference proceedings, journal articles...and more—available to your computer every two weeks.

For Internet access to *E-SCAN*, use any of the following addresses:

http://www.sti.nasa.gov
ftp.sti.nasa.gov
gopher.sti.nasa.gov

To receive a free subscription, send e-mail for complete information about the service first. Enter **scan@sti.nasa.gov** on the address line. Leave the subject and message areas blank and send. You will receive a reply in minutes.

Then simply determine the SCAN topics you wish to receive and send a second e-mail to **listserve@sti.nasa.gov**. Leave the subject line blank and enter a subscribe command in the message area formatted as follows:

Subscribe <desired list> <Your name>

For additional information, e-mail a message to **help@sti.nasa.gov**.

Phone: (301) 621-0390

Fax: (301) 621-0134

Write: NASA STI Help Desk
NASA Center for AeroSpace Information
7121 Standard Drive
Hanover, MD 21076-1320

Looking just for *Aerospace Medicine and Biology* reports?

Although hard copy distribution has been discontinued, you can still receive these vital announcements through your *E-SCAN* subscription. Just **subscribe SCAN-AEROMED** in the message area of your e-mail to **listserve@sti.nasa.gov**.

Table of Contents

Records are arranged in categories 51 through 55, the Life Sciences division of *STAR*. Selecting a category will link you to the collection of records cited in this issue pertaining to that category.

Indexes

Two indexes are available. You may use the find command under the tools menu while viewing the PDF file for direct match searching on any text string. You may also view the indexes provided, for searching on *NASA Thesaurus* subject terms and author names.

Selecting an index above will link you to that comprehensive listing.

Document Availability

Select Availability Info for important information about NASA Scientific and Technical Information (STI) Program Office products and services, including registration with the NASA Center for AeroSpace Information (CASI) for access to the NASA CASI TRS (Technical Report Server), and availability and pricing information for cited documents.

The New NASA Video Catalog is Here

Free!

To order your copy,
call the NASA STI Help Desk at
(301) 621-0390,
fax to
(301) 621-0134,
e-mail to
help@sti.nasa.gov,
or visit the NASA STI Program
homepage at
http://www.sti.nasa.gov

(Select STI Program Bibliographic Announcements)

Explore the Universe!

Document Availability Information

The mission of the NASA Scientific and Technical (STI) Program Office is to quickly, efficiently, and cost-effectively provide the NASA community with desktop access to STI produced by NASA and the world's aerospace industry and academia. In addition, we will provide the aerospace industry, academia, and the taxpayer access to the intellectual scientific and technical output and achievements of NASA.

Eligibility and Registration for NASA STI Products and Services

The NASA STI Program offers a wide variety of products and services to achieve its mission. Your affiliation with NASA determines the level and type of services provided by the NASA STI Program. To assure that appropriate level of services are provided, NASA STI users are requested to register at the NASA Center for AeroSpace Information (CASI). Please contact NASA CASI in one of the following ways:

E-mail:	help@sti.nasa.gov
Fax:	301-621-0134
Phone:	301-621-0390
Mail:	ATTN: Registration Services NASA Center for AeroSpace Information 7121 Standard Drive Hanover, MD 21076-1320

Limited Reproducibility

In the database citations, a note of limited reproducibility appears if there are factors affecting the reproducibility of more than 20 percent of the document. These factors include faint or broken type, color photographs, black and white photographs, foldouts, dot matrix print, or some other factor that limits the reproducibility of the document. This notation also appears on the microfiche header.

NASA Patents and Patent Applications

Patents and patent applications owned by NASA are announced in the STI Database. Printed copies of patents (which are not microfiched) are available for purchase from the U.S. Patent and Trademark Office.

When ordering patents, the U.S. Patent Number should be used, and payment must be remitted in advance, by money order or check payable to the Commissioner of Patents and Trademarks. Prepaid purchase coupons for ordering are also available from the U.S. Patent and Trademark Office.

NASA patent application specifications are sold in both paper copy and microfiche by the NASA Center for AeroSpace Information (CASI). The document ID number should be used in ordering either paper copy or microfiche from CASI.

The patents and patent applications announced in the STI Database are owned by NASA and are available for royalty-free licensing. Requests for licensing terms and further information should be addressed to:

National Aeronautics and Space Administration
Associate General Counsel for Intellectual Property
Code GP
Washington, DC 20546-0001

Sources for Documents

One or more sources from which a document announced in the STI Database is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below, with an Addresses of Organizations list near the back of this section. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source.

Avail: NASA CASI. Sold by the NASA Center for AeroSpace Information. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code following the letters HC or MF in the citation. Current values are given in the NASA CASI Price Code Table near the end of this section.

Note on Ordering Documents: When ordering publications from NASA CASI, use the document ID number or other report number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in Energy Research Abstracts. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center—Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: ESDU. Pricing information on specific data, computer programs, and details on ESDU International topic categories can be obtained from ESDU International.

Avail: Fachinformationszentrum Karlsruhe. Gesellschaft für wissenschaftlich-technische Information mbH 76344 Eggenstein-Leopoldshafen, Germany.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, CA. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration (JBD-4), Public Documents Room (Room 1H23), Washington, DC 20546-0001, or public document rooms located at NASA installations, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: NTIS. Sold by the National Technical Information Service. Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) are available. For information concerning this service, consult the NTIS Subscription Section, Springfield, VA 22161.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from Dissertation Abstracts and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: US Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of $1.50 each, postage free.

Avail: (US Sales Only). These foreign documents are available to users within the United States from the National Technical Information Service (NTIS). They are available to users outside the United States through the International Nuclear Information Service (INIS) representative in their country, or by applying directly to the issuing organization.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed on the Addresses of Organizations page. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Addresses of Organizations

British Library Lending Division
Boston Spa, Wetherby, Yorkshire
England

Commissioner of Patents and Trademarks
U.S. Patent and Trademark Office
Washington, DC 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, TN 37830

European Space Agency–
Information Retrieval Service ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

ESDU International
27 Corsham Street
London
N1 6UA
England

Fachinformationszentrum Karlsruhe
Gesellschaft für wissenschaftlich–technische
Information mbH
76344 Eggenstein–Leopoldshafen, Germany

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Center for AeroSpace Information
7121 Standard Drive
Hanover, MD 21076-1320

(NASA STI Lead Center)
National Aeronautics and Space Administration
Scientific and Technical Information Program Office
Langley Research Center – MS157
Hampton, VA 23681

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, CA 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, MI 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey Library National Center
MS 950
12201 Sunrise Valley Drive
Reston, VA 22092

U.S. Geological Survey Library
2255 North Gemini Drive
Flagstaff, AZ 86001

U.S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025

U.S. Geological Survey Library
Box 25046
Denver Federal Center, MS914
Denver, CO 80225

NASA CASI Price Code Table

(Effective July 1, 1998)

Code	U.S., Canada, & Mexico	Foreign
A01	$ 8.00	$ 16.00
A02	12.00	24.00
A03	23.00	46.00
A04	25.50	51.00
A05	27.00	54.00
A06	29.50	59.00
A07	33.00	66.00
A08	36.00	72.00
A09	41.00	82.00
A10	44.00	88.00
A11	47.00	94.00
A12	51.00	102.00
A13	54.00	108.00
A14	56.00	112.00
A15	58.00	116.00
A16	60.00	120.00
A17	62.00	124.00
A18	65.50	131.00
A19	67.50	135.00
A20	69.50	139.00
A21	71.50	143.00
A22	77.00	154.00
A23	79.00	158.00
A24	81.00	162.00
A25	83.00	166.00
A99	Contact NASA CASI	

Code	U.S., Canada, & Mexico	Foreign
E01	$101.00	$202.00
E02	109.50	219.00
E03	119.50	238.00
E04	128.50	257.00
E05	138.00	276.00
E06	146.50	293.00
E07	156.00	312.00
E08	165.50	331.00
E09	174.00	348.00
E10	183.50	367.00
E11	193.00	386.00
E12	201.00	402.00
E13	210.50	421.00
E14	220.00	440.00
E15	229.50	459.00
E16	238.00	476.00
E17	247.50	495.00
E18	257.00	514.00
E19	265.50	531.00
E20	275.00	550.00
E21	284.50	569.00
E22	293.00	586.00
E23	302.50	605.00
E24	312.00	624.00
E99	Contact NASA CASI	

Payment Options

All orders must be prepaid unless you are registered for invoicing or have a deposit account with the NASA CASI. Payment can be made by VISA, MasterCard, American Express, or Diner's Club credit card. Checks or money orders must be in U.S. currency and made payable to "NASA Center for AeroSpace Information." To register, please request a registration form through the NASA STI Help Desk at the numbers or addresses below.

Handling fee per item is $1.50 domestic delivery to any location in the United States and $9.00 foreign delivery to Canada, Mexico, and other foreign locations. Video orders incur an additional $2.00 handling fee per title.

The fee for shipping the safest and fastest way via Federal Express is in addition to the regular handling fee explained above—$5.00 domestic per item, $27.00 foreign for the first 1-3 items, $9.00 for each additional item.

Return Policy

The NASA Center for AeroSpace Information will replace or make full refund on items you have requested if we have made an error in your order, if the item is defective, or if it was received in damaged condition, and you contact CASI within 30 days of your original request.

NASA Center for AeroSpace Information
7121 Standard Drive
Hanover, MD 21076-1320

E-mail: help@sti.nasa.gov
Fax: (301) 621-0134
Phone: (301) 621-0390

Rev. 7/98

Federal Depository Library Program

In order to provide the general public with greater access to U.S. Government publications, Congress established the Federal Depository Library Program under the Government Printing Office (GPO), with 53 regional depositories responsible for permanent retention of material, inter-library loan, and reference services. At least one copy of nearly every NASA and NASA-sponsored publication, either in printed or microfiche format, is received and retained by the 53 regional depositories. A list of the Federal Regional Depository Libraries, arranged alphabetically by state, appears at the very end of this section. These libraries are not sales outlets. A local library can contact a regional depository to help locate specific reports, or direct contact may be made by an individual.

Public Collection of NASA Documents

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England for public access. The British Library Lending Division also has available many of the non-NASA publications cited in the STI Database. European requesters may purchase facsimile copy or microfiche of NASA and NASA-sponsored documents FIZ–Fachinformation Karlsruhe–Bibliographic Service, D-76344 Eggenstein-Leopoldshafen, Germany and TIB–Technische Informationsbibliothek, P.O. Box 60 80, D-30080 Hannover, Germany.

Submitting Documents

All users of this abstract service are urged to forward reports to be considered for announcement in the STI Database. This will aid NASA in its efforts to provide the fullest possible coverage of all scientific and technical publications that might support aeronautics and space research and development. If you have prepared relevant reports (other than those you will transmit to NASA, DOD, or DOE through the usual contract- or grant-reporting channels), please send them for consideration to:

ATTN: Acquisitions Specialist
NASA Center for AeroSpace Information
7121 Standard Drive
Hanover, MD 21076-1320.

Reprints of journal articles, book chapters, and conference papers are also welcome.

You may specify a particular source to be included in a report announcement if you wish; otherwise the report will be placed on a public sale at the NASA Center for AeroSpace Information. Copyrighted publications will be announced but not distributed or sold.

Federal Regional Depository Libraries

ALABAMA

AUBURN UNIV. AT MONTGOMERY LIBRARY
Documents Dept.
7300 University Dr.
Montgomery, AL 36117–3596
(205) 244–3650 Fax: (205) 244–0678

UNIV. OF ALABAMA
Amelia Gayle Gorgas Library
Govt. Documents
P.O. Box 870266
Tuscaloosa, AL 35487–0266
(205) 348–6046 Fax: (205) 348–0760

ARIZONA

DEPT. OF LIBRARY, ARCHIVES, AND PUBLIC RECORDS
Research Division
Third Floor, State Capitol
1700 West Washington
Phoenix, AZ 85007
(602) 542–3701 Fax: (602) 542–4400

ARKANSAS

ARKANSAS STATE LIBRARY
State Library Service Section
Documents Service Section
One Capitol Mall
Little Rock, AR 72201–1014
(501) 682–2053 Fax: (501) 682–1529

CALIFORNIA

CALIFORNIA STATE LIBRARY
Govt. Publications Section
P.O. Box 942837 – 914 Capitol Mall
Sacramento, CA 94337–0091
(916) 654–0069 Fax: (916) 654–0241

COLORADO

UNIV. OF COLORADO – BOULDER
Libraries – Govt. Publications
Campus Box 184
Boulder, CO 80309–0184
(303) 492–8834 Fax: (303) 492–1881

DENVER PUBLIC LIBRARY
Govt. Publications Dept. BSG
1357 Broadway
Denver, CO 80203–2165
(303) 640–8846 Fax: (303) 640–8817

CONNECTICUT

CONNECTICUT STATE LIBRARY
231 Capitol Avenue
Hartford, CT 06106
(203) 566–4971 Fax: (203) 566–3322

FLORIDA

UNIV. OF FLORIDA LIBRARIES
Documents Dept.
240 Library West
Gainesville, FL 32611–2048
(904) 392–0366 Fax: (904) 392–7251

GEORGIA

UNIV. OF GEORGIA LIBRARIES
Govt. Documents Dept.
Jackson Street
Athens, GA 30602–1645
(706) 542–8949 Fax: (706) 542–4144

HAWAII

UNIV. OF HAWAII
Hamilton Library
Govt. Documents Collection
2550 The Mall
Honolulu, HI 96822
(808) 948–8230 Fax: (808) 956–5968

IDAHO

UNIV. OF IDAHO LIBRARY
Documents Section
Rayburn Street
Moscow, ID 83844–2353
(208) 885–6344 Fax: (208) 885–6817

ILLINOIS

ILLINOIS STATE LIBRARY
Federal Documents Dept.
300 South Second Street
Springfield, IL 62701–1796
(217) 782–7596 Fax: (217) 782–6437

INDIANA

INDIANA STATE LIBRARY
Serials/Documents Section
140 North Senate Avenue
Indianapolis, IN 46204–2296
(317) 232–3679 Fax: (317) 232–3728

IOWA

UNIV. OF IOWA LIBRARIES
Govt. Publications
Washington & Madison Streets
Iowa City, IA 52242–1166
(319) 335–5926 Fax: (319) 335–5900

KANSAS

UNIV. OF KANSAS
Govt. Documents & Maps Library
6001 Malott Hall
Lawrence, KS 66045–2800
(913) 864–4660 Fax: (913) 864–3855

KENTUCKY

UNIV. OF KENTUCKY
King Library South
Govt. Publications/Maps Dept.
Patterson Drive
Lexington, KY 40506–0039
(606) 257–3139 Fax: (606) 257–3139

LOUISIANA

LOUISIANA STATE UNIV.
Middleton Library
Govt. Documents Dept.
Baton Rouge, LA 70803–3312
(504) 388–2570 Fax: (504) 388–6992

LOUISIANA TECHNICAL UNIV.
Prescott Memorial Library
Govt. Documents Dept.
Ruston, LA 71272–0046
(318) 257–4962 Fax: (318) 257–2447

MAINE

UNIV. OF MAINE
Raymond H. Fogler Library
Govt. Documents Dept.
Orono, ME 04469–5729
(207) 581–1673 Fax: (207) 581–1653

MARYLAND

UNIV. OF MARYLAND – COLLEGE PARK
McKeldin Library
Govt. Documents/Maps Unit
College Park, MD 20742
(301) 405–9165 Fax: (301) 314–9416

MASSACHUSETTS

BOSTON PUBLIC LIBRARY
Govt. Documents
666 Boylston Street
Boston, MA 02117–0286
(617) 536–5400, ext. 226
Fax: (617) 536–7758

MICHIGAN

DETROIT PUBLIC LIBRARY
5201 Woodward Avenue
Detroit, MI 48202–4093
(313) 833–1025 Fax: (313) 833–0156

LIBRARY OF MICHIGAN
Govt. Documents Unit
P.O. Box 30007
717 West Allegan Street
Lansing, MI 48909
(517) 373–1300 Fax: (517) 373–3381

MINNESOTA

UNIV. OF MINNESOTA
Govt. Publications
409 Wilson Library
309 19th Avenue South
Minneapolis, MN 55455
(612) 624–5073 Fax: (612) 626–9353

MISSISSIPPI

UNIV. OF MISSISSIPPI
J.D. Williams Library
106 Old Gym Bldg.
University, MS 38677
(601) 232–5857 Fax: (601) 232–7465

MISSOURI

UNIV. OF MISSOURI – COLUMBIA
106B Ellis Library
Govt. Documents Sect.
Columbia, MO 65201–5149
(314) 882–6733 Fax: (314) 882–8044

MONTANA

UNIV. OF MONTANA
Mansfield Library
Documents Division
Missoula, MT 59812–1195
(406) 243–6700 Fax: (406) 243–2060

NEBRASKA

UNIV. OF NEBRASKA – LINCOLN
D.L. Love Memorial Library
Lincoln, NE 68588–0410
(402) 472–2562 Fax: (402) 472–5131

NEVADA

THE UNIV. OF NEVADA LIBRARIES
Business and Govt. Information Center
Reno, NV 89557–0044
(702) 784–6579 Fax: (702) 784–1751

NEW JERSEY

NEWARK PUBLIC LIBRARY
Science Div. – Public Access
P.O. Box 630
Five Washington Street
Newark, NJ 07101–7812
(201) 733–7782 Fax: (201) 733–5648

NEW MEXICO

UNIV. OF NEW MEXICO
General Library
Govt. Information Dept.
Albuquerque, NM 87131–1466
(505) 277–5441 Fax: (505) 277–6019

NEW MEXICO STATE LIBRARY
325 Don Gaspar Avenue
Santa Fe, NM 87503
(505) 827–3824 Fax: (505) 827–3888

NEW YORK

NEW YORK STATE LIBRARY
Cultural Education Center
Documents/Gift & Exchange Section
Empire State Plaza
Albany, NY 12230–0001
(518) 474–5355 Fax: (518) 474–5786

NORTH CAROLINA

UNIV. OF NORTH CAROLINA – CHAPEL HILL
Walter Royal Davis Library
CB 3912, Reference Dept.
Chapel Hill, NC 27514–8890
(919) 962–1151 Fax: (919) 962–4451

NORTH DAKOTA

NORTH DAKOTA STATE UNIV. LIB.
Documents
P.O. Box 5599
Fargo, ND 58105–5599
(701) 237–8886 Fax: (701) 237–7138

UNIV. OF NORTH DAKOTA
Chester Fritz Library
University Station
P.O. Box 9000 – Centennial and University Avenue
Grand Forks, ND 58202–9000
(701) 777–4632 Fax: (701) 777–3319

OHIO

STATE LIBRARY OF OHIO
Documents Dept.
65 South Front Street
Columbus, OH 43215–4163
(614) 644–7051 Fax: (614) 752–9178

OKLAHOMA

OKLAHOMA DEPT. OF LIBRARIES
U.S. Govt. Information Division
200 Northeast 18th Street
Oklahoma City, OK 73105–3298
(405) 521–2502, ext. 253
Fax: (405) 525–7804

OKLAHOMA STATE UNIV.
Edmon Low Library
Stillwater, OK 74078–0375
(405) 744–6546 Fax: (405) 744–5183

OREGON

PORTLAND STATE UNIV.
Branford P. Millar Library
934 Southwest Harrison
Portland, OR 97207–1151
(503) 725–4123 Fax: (503) 725–4524

PENNSYLVANIA

STATE LIBRARY OF PENN.
Govt. Publications Section
116 Walnut & Commonwealth Ave.
Harrisburg, PA 17105–1601
(717) 787–3752 Fax: (717) 783–2070

SOUTH CAROLINA

CLEMSON UNIV.
Robert Muldrow Cooper Library
Public Documents Unit
P.O. Box 343001
Clemson, SC 29634–3001
(803) 656–5174 Fax: (803) 656–3025

UNIV. OF SOUTH CAROLINA
Thomas Cooper Library
Green and Sumter Streets
Columbia, SC 29208
(803) 777–4841 Fax: (803) 777–9503

TENNESSEE

UNIV. OF MEMPHIS LIBRARIES
Govt. Publications Dept.
Memphis, TN 38152–0001
(901) 678–2206 Fax: (901) 678–2511

TEXAS

TEXAS STATE LIBRARY
United States Documents
P.O. Box 12927 – 1201 Brazos
Austin, TX 78701–0001
(512) 463–5455 Fax: (512) 463–5436

TEXAS TECH. UNIV. LIBRARIES
Documents Dept.
Lubbock, TX 79409–0002
(806) 742–2282 Fax: (806) 742–1920

UTAH

UTAH STATE UNIV.
Merrill Library Documents Dept.
Logan, UT 84322–3000
(801) 797–2678 Fax: (801) 797–2677

VIRGINIA

UNIV. OF VIRGINIA
Alderman Library
Govt. Documents
University Ave. & McCormick Rd.
Charlottesville, VA 22903–2498
(804) 824–3133 Fax: (804) 924–4337

WASHINGTON

WASHINGTON STATE LIBRARY
Govt. Publications
P.O. Box 42478
16th and Water Streets
Olympia, WA 98504–2478
(206) 753–4027 Fax: (206) 586–7575

WEST VIRGINIA

WEST VIRGINIA UNIV. LIBRARY
Govt. Documents Section
P.O. Box 6069 – 1549 University Ave.
Morgantown, WV 26506–6069
(304) 293–3051 Fax: (304) 293–6638

WISCONSIN

ST. HIST. SOC. OF WISCONSIN LIBRARY
Govt. Publication Section
816 State Street
Madison, WI 53706
(608) 264–6525 Fax: (608) 264–6520

MILWAUKEE PUBLIC LIBRARY
Documents Division
814 West Wisconsin Avenue
Milwaukee, WI 53233
(414) 286–3073 Fax: (414) 286–8074

Typical Report Citation and Abstract

❶ 19970001126 NASA Langley Research Center, Hampton, VA USA
❷ Water Tunnel Flow Visualization Study Through Poststall of 12 Novel Planform Shapes
❸ Gatlin, Gregory M., NASA Langley Research Center, USA Neuhart, Dan H., Lockheed Engineering and Sciences Co., USA;
❹ Mar. 1996; 130p; In English
❺ Contract(s)/Grant(s): RTOP 505-68-70-04
❻ Report No(s): NASA-TM-4663; NAS 1.15:4663; L-17418; No Copyright; Avail: CASI; A07, Hardcopy; A02, Microfiche
❼ To determine the flow field characteristics of 12 planform geometries, a flow visualization investigation was conducted in the Langley 16- by 24-Inch Water Tunnel. Concepts studied included flat plate representations of diamond wings, twin bodies, double wings, cutout wing configurations, and serrated forebodies. The off-surface flow patterns were identified by injecting colored dyes from the model surface into the free-stream flow. These dyes generally were injected so that the localized vortical flow patterns were visualized. Photographs were obtained for angles of attack ranging from 10' to 50', and all investigations were conducted at a test section speed of 0.25 ft per sec. Results from the investigation indicate that the formation of strong vortices on highly swept forebodies can improve poststall lift characteristics; however, the asymmetric bursting of these vortices could produce substantial control problems. A wing cutout was found to significantly alter the position of the forebody vortex on the wing by shifting the vortex inboard. Serrated forebodies were found to effectively generate multiple vortices over the configuration. Vortices from 65' swept forebody serrations tended to roll together, while vortices from 40' swept serrations were more effective in generating additional lift caused by their more independent nature.
❽ Author
❾ *Water Tunnel Tests; Flow Visualization; Flow Distribution; Free Flow; Planforms; Wing Profiles; Aerodynamic Configurations*

Key

1. Document ID Number; Corporate Source
2. Title
3. Author(s) and Affiliation(s)
4. Publication Date
5. Contract/Grant Number(s)
6. Report Number(s); Availability and Price Codes
7. Abstract
8. Abstract Author
9. Subject Terms

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 476)

OCTOBER 19, 1998

51
LIFE SCIENCES (GENERAL)

19980218117 NASA, Washington, DC USA
Life Sciences Program Tasks and Bibliography for FY 1997
Nelson, John C., Editor, NASA, USA; Feb. 1998; 1050p; In English
Report No.(s): NASA/TM-1998-206987; NAS 1.15:206987; No Copyright; Avail: CASI; A99, Hardcopy; A10, Microfiche

This document includes information on all peer reviewed projects funded by the Office of Life and Microgravity Sciences and Applications, Life Sciences Division during fiscal year 1997. This document will be published annually and made available to scientists in the space life sciences field both as a hard copy and as an interactive internet web page.
Author
Life Sciences; Microgravity Applications; Bibliographies; NASA Programs

19980218254 New Energy and Industrial Technology Development Organization, Tokyo, Japan
Research study on analysis/use technologies of genome information *Genome joho kaidoku riyo gijutsu no chosa kenkyu*
Mar. 1997; 154p; In Japanese
Report No.(s): NEDO-PR-9601; DE98-745387; No Copyright; Avail: Issuing Activity (Natl Technical Information Service (NTIS)), Microfiche

For wide use of genome information in the industrial field, the required R and D was surveyed from the standpoints of biology and information science. To clarify the present state and issues of the international research on genome analysis, the genome map as well as sequence and function information are first surveyed. The current analysis/use technologies of genome information are analyzed, and the following are summarized: prediction and identification of gene regions in genome sequences, techniques for searching and selecting useful genes, and techniques for predicting the expression of gene functions and the gene-product structure and functions. It is recommended that R and D and data collection/interpretation necessary to clarify inter-gene interactions and information networks should be promoted by integrating Japanese advanced know-how and technologies. As examples of the impact of the research results on industry and society, the present state and future expected effect are summarized for medicines, diagnosis/analysis instruments, chemicals, foods, agriculture, fishery, animal husbandry, electronics, environment and information.
DOE
Agriculture; Animals; Data Acquisition; Diagnosis; Fisheries; Genes

19980218874 San Jose State Univ., Dept. of Biological Sciences, CA USA
The Coupling of Solution Chemistry to Plant Nutrient Demand in an on Demand Nutrient Delivery System *Final Report*
Savage, Wayne, San Jose State Univ., USA; 1998; 6p; In English
Contract(s)/Grant(s): NCC2-5179; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

The goal of the proposal will be to determine the suitability of the DASI instrument in providing a signal that can be recognized and be utilized as an indicator of plant stress. The method to be utilized for evaluating stress is the presentation of an every increasing level of nutrient deficiency and salinity stress (addition of salt (NACl) or increasing concentration of balanced nutrient) while simultaneously recording spectral reflectance using the DASI instrument and monitoring the traditional processes of gas exchange and nutrient uptake parameters. In this manner, we will be able to directly compare the DASI measurements with known stresses as determined by the traditional gas exchange and nutrient uptake measures of stress. We anticipate that the DASI will provide a sensitive identifier of plant stress; recording signals of the resulting changes in plant metabolism in real time, far before any visible effects of stress could be observed. Thus, there is a potential for very early management intervention to correct a stress condition before damage could develop. The present response time for the observation of visual symptoms of plant stress is consid-

erable and only provides an indication that a stress is present after it has been present for an extended period of time. Thus, the impact of a plant-based life support function will have already been significant. An additional benefit of this research to regenerative life support will be the characterization of a potential recovery scenario from various degrees of stress. The experimental approach to be employed includes the removal of the stress at various points in the stress gradient and the characterization of plant performance and reflectance spectra during recovery from various degrees of stress. Spectral reflectance imaging techniques have been developed and used to measure the biochemical composition of plants and relate these characteristics to the fluxes of biochemical elements within the ecosystem.
Derived from text
Imaging Techniques; Plant Stress; Nutrients; Gas Exchange; Life Support Systems

52
AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

19980216516 Louisiana State Univ., Pennington Biomedical Research Center, Baton Rouge, LA USA
Determination of Total Daily Energy Requirements and Activity Patterns of Service Women *Annual Report, 26 Sep. 1996 - 25 Sep 1997*
Delany, James P., Louisiana State Univ., USA; Oct. 1997; 15p; In English
Contract(s)/Grant(s): DAMD17-96-2-6025
Report No.(s): AD-A346857; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The objective of the current study is to define a range of energy requirements of servicewomen, defining the variation as it relates to jobs, military settings, and activity patterns. This is crucial information needed not only for determination of nutritional requirements for energy balance, but specific nutrient density standards for servicewomen. Total daily energy expenditure will be measured using the doubly labeled water (DLW) method. Activity patterns from actigraphs will be analyzed for hours of sleep, description of job/work patterns by examining bursts of concerted activity versus steady activity. Men will also be studied in many of these settings. Energy requirements for men have been better established and will serve to anchor the results obtained in women to previously established norms in men. Several field studies will be conducted over the course of the grant. The first field study was conducted at Fort Bragg/Camp Mckall during a Combat Support Hospital training exercise, during the first year of the grant. Isotope and activity monitor analyses for all samples are nearly complete and final calculations and study report will be completed within the next 4-6 months. Identification of the next population to study is underway.
DTIC
Nutrition; Balance; Education; Energy Budgets; Energy Requirements; Females; Nutritional Requirements; Fatigue (Biology)

19980217140 California Univ., Dept. of Psychology, Santa Cruz, CA USA
[Activities of Psychology Dept., California Univ.] *Progress Report*
Bridgeman, Bruce, California Univ., USA; 1998; 4p; In English
Contract(s)/Grant(s): NCC2-1003; No Copyright; Avail: CASI; A01, Hardcopy; A01, Microfiche

We have completed two studies during the grant period, with manuscripts published or ready for submission for publication: (1) Dual adaptation and adaptive generalization in the human vestibuloocular reflex and (2) Frequency vs. acceleration specificity in human VOR adaptation. In the 1st study two studies examined the possibility that rotational VOR plasticity is subject to dual adaptation and adaptive generalization. Subjects in the experimental condition were exposed to an altered visual-vestibular environment for about four minutes every day for five consecutive days. The working hours between these testing sessions constituted re-exposure to the normal visual environment. Thus, subjects were repeatedly adapting and re-adapting to both environments which is a condition designed to produce dual adaptation. In each training session a measure of baseline VOR gain was obtained (in the dark). A small laser spot (the only visual stimulus) was systematically moved in the same direction as the subject's head, but by half the angle of rotation (target/head gain = 0.5). This resulted in adaptation values relativized to the non-adapted gain of each subject. These values were then analyzed using an analysis of variance with day and session (within a day) as factors. In the 2nd study human VOR adaption has been assumed to be frequency specific, despite the fact that the semicircular canals are simulated by rotational acceleration and not frequency per se.
Derived from text
Analysis of Variance; Vestibules; Semicircular Canals; Psychology; Human Tolerances; Adaptation

19980218119 Health Effects Inst., Cambridge, MA USA
Mechanism of Oxidative Stress from Low Levels of Carbon Monoxide, ***May 1995 - Jun. 1996***
Thom, S. R., Health Effects Inst., USA; Ischiropoulos, H., Health Effects Inst., USA; Dec. 1997; 44p; In English
Report No.(s): PB98-151608; HEI/RR-80/97; Copyright; Avail: Issuing Activity (Natl Technical Information Service (NTIS)), Microfiche

The purpose of this study was to determine whether platelets and vascular endothelial cells liberate nitric oxide (NO) and NO-derived oxidant species after exposure to carbon monoxide (CO). We hypothesized that exposure to environmentally relevant concentrations of CO would increase production of agents that may be involved in human pathological processes, such as atherosclerosis.
NTIS
Platelets; Nitric Oxide; Cells (Biology); Exposure

19980218439 Stanford Univ., Hopkins Marine Station, Pacific Grove, CA USA
The Regulation of Gene Expression in Cnidarian-Algal Associations ***Final Report, 1 Jul. 1992 - 5 May 1998***
Levine, R. Paul, Stanford Univ., USA; Jul. 13, 1998; 6p; In English
Contract(s)/Grant(s): N00014-92-J-1856-P00001
Report No.(s): AD-A349126; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

We have characterized genes encoding heat shock proteins and proteins of the ubiquitin system. Constitutive forms of the HSP60 and 70 families of heat shock proteins and an inducible form of HSP60 occur in symbiotic and aposymbiotic A. ptasia pallida. We have constructed cDNA libraries from aposymbiotic A. pallida and symbiotic A. pallida and Anthopleura eligantissima. We have a complete sequence for A. pallida HSP60. We have completed the comparison of protein profiles of A. eligantissima (see J. Exp Biol. 1996, 199:883-892) and have identified three symbiosis-specific proteins. One is carbonic anhydrase with an apparent molecular weight of 31 kDa and a pI of 6.3. We have obtained N-terminal sequence for second protein; it has an apparent molecular weight of 32 kDa and a pI of 7,9. It does not align with any sequences in the GenBank data base. A third symbiosis-specific protein, having an apparent weight of 30 kD and a pI of 5.6, crossreacts with a monoclonal anti-HSP70 antibody. The synthesis of this protein is enhanced in animals subjected to elevated temperatures and in animals maintained in the dark. Further investigations of these proteins are underway by Dr. Virginia Weis at Oregon State University.
DTIC
Genes; Algae; Gene Expression; Pathology; Thermal Shock; Coding

19980218579 Illinois Univ., Dept. of Veterinary Biosciences, Urbana, IL USA
Development of Corneal Equivalents for In Vitro Testing of Ocular Irritants ***Final Report, 1 Mar. 1995 - 30 Apr. 1998***
Eurell, Thomas E., Illinois Univ., USA; Jul. 02, 1998; 14p; In English
Contract(s)/Grant(s): F9620-95-1-0168; AF Proj. 2312
Report No.(s): AD-A349607; AFRL-SR-BL-TB-98-0535; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Using tissue culture methods developed by our research team, we have achieved standardized methods for producing organotypic models of the rabbit and human cornea. One rabbit cornea will provide enough seed culture cells to produce 40-50 rabbit corneal equivalents. One human cornea will provide enough seed culture cells to produce 3-5 human corneal equivalents. No live animals were used in this research project as we obtained the rabbit eyes from a meat processing plant. Human corneal tissue was recovered from post-surgical specimens following corneal transplant surgery. Immunologic techniques were used to develop a reference biomarker database. Interleukin-1 (IL-i) was not detected in the rabbit or human native tissue or the rabbit corneal equivalents. intercellular adhesion molecule-1 (ICAM-1) and Fibronectin (FN) were inconsistently found in the human and rabbit native tissue and were not detected in the rabbit corneal equivalents. Heat Shock Protein 70 (HSP70) was consistently detected and cataloged in a reference database for both the human and rabbit native tissue and the rabbit corneal equivalents. Rabbit organotypic corneal models demonstrated characteristic histopathologic changes such as coagulative necrosis and liquefactive necrosis following in vitro exposure to prototypic chemicals.
DTIC
Adhesion; Animals; Catalogs (Publications); Cornea; Culture Techniques; Data Bases; Exposure

19980218635 Agency for Health Care Policy and Research, Rockville, MD USA
Signal-Averaged Electrocardiography. Health Technology Assessment Number 11
Graham, A. A., Agency for Health Care Policy and Research, USA; Handelsman, H., Agency for Health Care Policy and Research, USA; May 1998; 30p; In English
Report No.(s): PB98-137227; AHCPR-98-0020; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Signal-averaged electrocardiography (SAECG) is technique involving computerized analysis of segments of a standard surface electrocardiogram. It is used for detecting small electrical impulses, termed ventricular late potentials, that follow the QRS segment. They are embedded in the electrocardiogram but ordinarily obscured by skeletal muscle activity and other extraneous sources of 'noise' encountered in recording a standard electrocardiogram.
NTIS
Activity (Biology); Computer Techniques; Detection; Diagnosis; Electrocardiography; Embedding

53
BEHAVIORAL SCIENCES

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

19980216513 Secretary of the Air Force, Inspector General, Washington, DC USA
Broad Area Review of the Enhanced Flight Screening Program
Mar. 17, 1998; 116p; In English
Report No.(s): AD-A346804; No Copyright; Avail: CASI; A06, Hardcopy; A02, Microfiche

This review fulfills a Secretary of the Air Force tasking to conduct a Broad Area Review (BAR) of the Enhanced Flight Screening (EFS) program to reduce risk. On 16 Dec 97, the team began reviewing data and identifying hazards. The data review included the draft Air Education and TrainIng Command BAR on the EFS program, other program documentation, operations and maintenance manuals and procedures, and applicable Federal Aviation Administration (FAA) regulations. Initial hazard identification was performed through functional expert brainstorming, review of the draft AETC BAR, and use of the Air Force Safety Center's 5-M (Mission, Man, Machine, Media, and Management) Risk Identification Model. From 4-21 Jan 98, the team conducted interviews, reviewed data, and inspected facilities and equipment at locations involved with the EFS program. The team also conducted telephone interviews with the Federal Aviation Administration (FAA) (in both Washington DC and at the Small Aircraft Directorate, Kansas City MO), and with personnel involved with the original T-3A acquisition and testing. Next, the team assessed the current EFS program against established goals and standard Air Force practices. This assessment completed the hazard identification process and provided data necessary to determine risks to the EFS program's safety and screening effectiveness. This risk was determined by evaluating a hazard's probability of occurrence and severity. Once these risks were identified, the team evaluated methods to mitigate to levels considered acceptable.
DTIC
Flight Training; Personnel; Data Management; Hazards; Safety

19980218775 Institute for Human Factors TNO, Soesterberg, Netherlands
Training with Simulated Team Members ***Interim Report Trainen met gesimuleerde teamleden***
Verstegen, D. M. L., Institute for Human Factors TNO, Netherlands; Nov. 13, 1997; 40p; In Dutch
Contract(s)/Grant(s): B97-033
Report No.(s): TNO-TM-97-B023; TD-97-0255; Copyright; Avail: Issuing Activity (TNO Human Factors Research Inst., Kampweg 5, 3769 DE Soesterberg, The Netherlands); US Sales Only, Hardcopy, Microfiche

A task is labelled as a team task when people have to conduct a task that each of them could not have done alone. Team tasks consist of three components: 1 The individual tasks of the team members. 2 The cooperation and coordination between team members. 3 The motivation and attitudes of the team members. These components are vital for team performance and should therefore also be addressed during the training of teams. However, the field of team training is still underdeveloped, especially for training regarding the second component: the cooperation and coordination between team members. For some fields or aspects training concepts have been developed, e.g. cross-training and Crew Resource Management training. But it is not clear whether these training concepts can be used for other kinds of team tasks. Little research has addressed the issue of the timing of training regarding the different components. In most cases the team members are first trained individually until they have mastered their own individual tasks. Then team members train together to learn how to cooperate and how to coordinate their tasks. Whether this is always'the optimal trajectory is unknown. Both training in teams and training individually have advantages and disadvantages. Individual training is easier to control and the training can be adapted to one particular student. However, the three components can only be integrated when team members are training together. and this improves the transfer of knowledge and skills. Practicing with simulated team members offers the advantages of training apart and training together. Both the individual tasks and the cooperation with other team members can be addressed systematically. Moreover, the student can be better prepared for the real task situation with scenarios where the simulated team members are programmed to function suboptimally. Implementing simulations of team

members is, however, a difficult and labour under intensive task. Therefore, it is proposed to test the validity of the new training concept by replacing the simulations by experts who are trained to perform in a standard way.
Author
Education; Coordination; Teams; Human Performance

54
MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing. For related information see also 16 Space Transportation.

19980215581 Freshaire Systems and Technology, Inc., Cleveland, OH USA
Portable Electrochemical Oxygen Concentrator for Battlefield Combat Casualty Care *Final Report, 1 Jul. 1997 - 28 Feb. 1998*
Burk, Melvyn, Freshaire Systems and Technology, Inc., USA; Mar. 1998; 26p; In English
Contract(s)/Grant(s): DAMD17-97-2-7011
Report No.(s): AD-A347568; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The primary goal of this overall research and development program is to design and construct a Portable ElectroChemical Oxygen Concentrator (PECOC) capable of producing nearly pure (greater than 98%) oxygen from the ambient atmosphere at room temperature. This novel device relies on the two-electron reduction of oxygen to peroxide at a high area carbon-based, gas-permeable, Teflon-bonded (HAC-GPTB) cathode, which then migrates through a thin solid polymer electrolyte(SPE) membrane to a gas-diffusion (GD) anode, where it is oxidized to yield dioxygen. Two major aspects were emphasized during this first six-month period: the identification of highly active, highly specific electrocatalysts for the two-electron reduction of O2 to peroxide and for the oxidation of peroxide to O2 in acid media and the construction of a prototype stack reactor capable of delivering pure oxygen at levels comparable to those required for field medical applications (3 L/min). Significant progress was made in both of these areas. In particular, a simple surface modifier for platinum was found to promote the quantitative reduction of dioxygen peroxide at small overpotentials in dilute phosphoric acid as evidenced by rotating ring-disk techniques results. Furthermore, a full size PECOC unit built from commercially procured materials was shown to deliver pure dioxygen in several independent trials.
DTIC
Electron Transitions; Life Support Systems; Electrocatalysts; Concentrators; Research and Development; Design Analysis; Fabrication; Oxygen Analyzers

19980216735 Texas Univ. Health Science Center, School of Public Health, Houston, TX USA
Incidence of USA Air Force Aircrew Fatigue in the Operational Setting
Lee, Karl E., Texas Univ. Health Science Center, USA; Jun. 10, 1998; 65p; In English
Report No.(s): AD-A346896; AFIT-98-025; No Copyright; Avail: CASI; A04, Hardcopy; A01, Microfiche

Though subjective fatigue measures have been utilized in assessing aircrew fatigue, no studies to date have attempted to establish its overall incidence in the USAF flying community. The purpose of this study was to investigate the incidence of subjective fatigue in the USAF operational environment, looking specifically at those pilots and flight engineers that regularly fly long transport missions. The study group included all pilots and flight engineers belonging to the USA Air Force Reserve's 68TH Airlift Squadron stationed at Kelly AFB, TX. This squadron has approximately 65 pilots and 70 flight engineers and utilizes the C-S Galaxy transport aircraft exclusively. Pre and postmission questionnaires were completed prior to and at mission completion respectively. Throughout the mission, the study subjects completed a mission log, which tracked type of activity, serial fatigue rating, and place of sleep. Subjective fatigue was rated starting at mission onset, every four hours throughout the mission and at mission completion, that is, at time of engine shut down. Fatigue was measured using the School of Aerospace Medicine (SAM) seven point fatigue scale. Despite the endorsement of the wing commander, full support of the wing safety officer, two separate briefings to the squadron at monthly safety briefings, and placement of questionnaire packets in over 135 individual's vertical files (V-files or "mail boxes), only six questionnaire packets were returned. Despite the lack of response, this study does serve as a pilot study, which together with lessons learned may prove useful in future studies of USAF aircrew fatigue in the operational setting.
DTIC
Safety; Transport Aircraft; Sleep; Fatigue (Biology)

19980218123 Haas Tailoring Co., Baltimore, MD USA

Extractions of Garment Manufacturing Data from 3D Whole Body Scans *Final Report, 18 Sep. 1996 - 18 Sep 1997*

McLean, Michael L., Sr., Haas Tailoring Co., USA; Newsom, Benjamin, Haas Tailoring Co., USA; Feb. 18, 1998; 162p; In English

Contract(s)/Grant(s): SPO100-95-D-1044

Report No.(s): AD-A347501; No Copyright; Avail: CASI; A08, Hardcopy; A02, Microfiche

The project is to develop a computer-based, interactive measurement and posture data acquisition system. The system will be implemented as a Microsoft-Windows(95/NT) computer program which accepts 3D whole body scan data and produces manufacturing oriented measurement and posture specifications. For the men's uniform there are approximately 24 different measurements or posture specifications which may be required. For the women's uniform there are approximately 30 different measurements or posture specifications to handle As measurements and posture specifiers are derived, they are "validated" against statistical norms and ranges. The data for these statistical norms on human build resides in the Haas Tailoring anthropomorphic data base of over 8,000 military personnel and over 75,000 members of the general population. These validated measurements and posture specifications will be automatically submitted to a pattern design system to produce a special measure pattern. Systems under considerations are the Haas Tailoring Expert System, the Gerber Garment Made-to-Measure System, and/or other garment CAD systems.

DTIC

Computer Programs; Posture; Scanners; Manufacturing; Human Body; Computer Techniques; Computer Aided Design

19980218872 Valdosta State Univ., Valdosta, GA USA

Testing an Algae-Based Air-Regeneration System *Final Report*

Nienow, James, Valdosta State Univ., USA; 1998; 31p; In English

Contract(s)/Grant(s): NAGw-4897; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The potential of an air-regeneration system based on the growth of unicellular algae on the surface of porous ceramic tubes was evaluated. The system is fairly robust with respect to environmental conditions and is capable of maintaining algal cultures for up to 365 days. Under standard conditions (50-66 micro mol/sq mm s (PPF), 450 micro mol mol of CO2), mature tubes can remove CO2 at a rate of up to 90 micro mol/sq m min. Under these conditions, approximately 200 square meters of area would be required for each member of the crew. However, the rate of uptake increases with both photon flux and CO2 concentration in accordance with Michaelis-Menton dynamics. An extrapolation to conditions of saturating light and carbon dioxide indicates that the area required can be reduced by a factor of at least 2.5.

Author

Performance Tests; Regeneration (Engineering); Regenerators; Algae; Oxygen Production

Subject Term Index

Personal Author Index

Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA/SP—1998-7011/SUPPL476		

4. Title and Subtitle	5. Report Date
Aerospace Medicine and Biology A Continuing Bibliography (Supplement 476)	October 19, 1998
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
	10. Work Unit No.
9. Performing Organization Name and Address	
NASA Scientific and Technical Information Program Office	11. Contract or Grant No.

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
National Aeronautics and Space Administration Langley Research Center Hampton, VA 23681	Special Publication
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This report lists reports, articles and other documents recently announced in the NASA STI Database.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
Aerospace Medicine Bibliographies Biological Effects	Unclassified – Unlimited Subject Category – 52

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	22	A03/HC

For sale by the NASA Center for AeroSpace Information, 7121 Standard Drive, Hanover, MD 21076-1320